

WHAT IS CLAIMED IS:

1. A substrate processing apparatus for drying a processing solution adhered to a substrate, comprising:

5 a processing chamber for isolating an ambient atmosphere of a substrate from outside;

a holding element for holding a substrate in said processing chamber;

a heating and pressure element for realizing rise in temperature and pressure in said processing chamber; and

10 a release element for releasing an atmosphere in said processing chamber in an external atmosphere existing outside said processing chamber,

wherein said release element releases an atmosphere in said processing chamber when said processing solution in said processing chamber is placed at a temperature which is a boiling point of said processing solution in said external atmosphere or higher.

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2. The substrate processing apparatus according to claim 1,

wherein said heating and pressure element supplies vapor to said processing chamber, to thereby realize rise in temperature and pressure in said processing chamber, said vapor being generated from a solution which is of the same type as said processing
20 solution.

3. The substrate processing apparatus according to claim 1, further comprising:
a gas supply element for supplying inert gas to said processing chamber.

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4. The substrate processing apparatus according to claim 1,

wherein said processing chamber comprises:
a heating element for heating said processing chamber.

5 5. The substrate processing apparatus according to claim 1,
wherein said processing chamber comprises:
a drainage element for draining said processing solution.

10 6. The substrate processing apparatus according to claim 1,
wherein said processing solution is pure water,
wherein said external atmosphere is the atmosphere, and
wherein said release element releases an atmosphere in said processing chamber
when said pure water in said processing chamber is placed at a temperature which is 100
degrees centigrade or higher.

15 7. A substrate processing apparatus for performing predetermined processing on
a substrate, comprising:
a processing chamber for storing a substrate and a processing solution;
a holding element for holding a substrate in said processing chamber;
a drainage element for draining a processing solution stored in said processing
20 chamber; and
a vapor supply element for supplying vapor to said processing chamber, said
vapor being generated from a solution which is of the same type as said processing
solution,
wherein said vapor is supplied from said vapor supply element to said
25 processing chamber while said drainage element drains said processing solution stored in

said processing chamber.

8. The substrate processing apparatus according to claim 7, further comprising:
a gas supply element for supplying inert gas to said processing chamber.

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9. The substrate processing apparatus according to claim 8,
wherein said gas supply element supplies inert gas to said processing chamber
prior to supply of said vapor from said vapor supply element to said processing chamber.

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10. The substrate processing apparatus according to claim 8,
wherein said gas supply element supplies inert gas to said processing chamber
after drainage of said processing solution stored in said processing chamber by said
drainage element.

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11. The substrate processing apparatus according to claim 7, further
comprising:
a heating element for heating said processing chamber.

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12. The substrate processing apparatus according to claim 7, wherein
said vapor supply element heats said vapor and supplies the heated vapor to said
processing chamber.

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13. A substrate processing method for drying a processing solution adhered to a
substrate, comprising the steps of:

(a) holding a substrate in a processing chamber which isolates an ambient

atmosphere of a substrate from outside;

(b) realizing rise in temperature and pressure in said processing chamber; and

(c) releasing an atmosphere in said processing chamber when said processing solution in said processing chamber is placed at a temperature which is a boiling point of said processing solution in an external atmosphere or higher existing outside said processing chamber.

14. The method according to claim 13,

wherein said step (b) comprises the step of:

(b-1) supplying vapor to said processing chamber, to thereby realize rise in temperature and pressure in said processing chamber, said vapor being generated from a solution which is of the same type as said processing solution.

15. The method according to claim 13, further comprising the step of:

(d) supplying inert gas to said processing chamber.

16. The method according to claim 13, further comprising the step of:

(e) draining said processing solution from said processing chamber.

17. The method according to claim 13,

wherein said processing solution is pure water,

wherein said external atmosphere is the atmosphere, and

wherein said step (c) comprises the step of:

(c-1) releasing an atmosphere in said processing chamber when said pure water in said processing chamber is placed at a temperature which is 100 degrees centigrade or

higher.

18. A substrate processing method for performing predetermined processing on a substrate, comprising the steps of:

5 (a) holding a substrate in a processing chamber capable of isolating an atmosphere therein from outside;

(b) while a substrate is immersed in a processing solution in said processing chamber, supplying vapor to said processing chamber which is generated from a solution of the same type as said processing solution; and

10 (c) while said vapor is supplied to said processing chamber, draining said processing solution stored in said processing chamber.

19. The method according to claim 18, further comprising the step of:

(d) supplying inert gas to said processing chamber after said step (c).

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20. The method according to claim 18, further comprising the step of:

(e) supplying inert gas to said processing chamber prior to said step (b); and

(f) supplying inert gas to said processing chamber after said step (c).

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21. The method according to claim 18,

wherein said step (b) comprises the step of:

(b-1) exhausting said processing chamber.

22. The method according to claim 19,

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wherein said step (d) comprises the step of:

(d-1) exhausting said processing chamber.

23. The method according to claim 20,
wherein said processing chamber is exhausted in said steps (e) and (f).

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24. The method according to claim 18,
wherein said processing chamber is heated in said steps (a), (b) and (c).

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25. The method according to claim 18,
wherein said step (b) comprises the step of:
(b-2) heating said vapor to supply the heated vapor to said processing chamber.